

**AMENDMENTS TO THE SPECIFICATION:**

Please replace the paragraph beginning on page 7, line 17, with the following:

Fig. 3A is an exploded perspective view of a waveguide coupler showing a first embodiment of the present invention. Fig. 3B is a sectional view of the waveguide coupler. In ~~[[the]]~~ these figures, 1a and 1b indicate dielectric substrates, 2a and 2b indicate waveguide terminals formed in the dielectric substrates, 7 indicates solder serving as an electrically conductive joint member, and 8a and 8b indicate GND (grounded conductive) surfaces, each disposed on the surface of the individual substrate for conducting electricity to the grounded conductor of respective waveguide terminal.

Please replace the paragraph beginning on page 9, line 7, with the following:

The connection of the waveguide terminals will be described. In the figures, the dielectric substrates 1a and 1b, the waveguide terminals 2a and 2b, and the GND surfaces 8a and 8b are arranged similarly to those of Embodiment 1 and have similar functions. It should be noted that the GND surface 8a, although not shown in Fig. 4, is disposed on the side of the dielectric substrate 1a facing the dielectric substrate 1b. A plurality of ball-shaped, barrel-shaped, or cylindrical solders 7 are arranged between and in contact with the GND surfaces 8a and 8b, so as to surround the circumference of the waveguide terminals 2a and 2b. The ball-shaped, barrel-shaped, or cylindrical solders 7 are arranged in a row so that a gap between adjacent solders 7 is less than  $\frac{1}{4}$  of the wavelength of a high frequency signal which passes through the waveguide terminals 2a and 2b as shown in Fig. 4. In this way, the two dielectric substrates 1a and 1b, and the ball-shaped, barrel-shaped,

or cylindrical solders 7 are arranged so that the waveguide terminals 2a and 2b formed in the dielectric substrates 1a and 1b are connected by soldering.

Please replace the paragraph bridging pages 9 and 10, with the following:

Fig. 5A is a top view of the dielectric substrate of the waveguide coupler described in connection with Fig. 4. In the configuration shown in Fig. 5A, each dielectric substrate 1a, 1b includes the waveguide terminal 2a, 2b formed in each substrate, and the GND surface 8a, 8b disposed on the surface of the substrate for conducting electricity to the grounded conductor of the waveguide terminal 2a, 2b. A plurality of ball-shaped, barrel-shaped, or cylindrical solders 7 are arranged in a row on the GND surfaces 8a and 8b of the dielectric substrates 1a and 1b, respectively, around the waveguide terminals 2a and 2b. In this case, a gap between adjacent ball-shaped, barrel-shaped, or cylindrical solders 7 is less than  $\frac{1}{4}$  of the wavelength of a high frequency signal which passes through the waveguide terminals 2a and 2b, as described above in Fig. 4.

Please replace the paragraph bridging pages 14 and 15, with the following:

Figs. 8A and 8B are top views of a dielectric substrate of a waveguide coupler according to a third embodiment of the present invention. In ~~[[the]]~~ these figures, 1 to 9 indicate elements similar to those of Embodiment 2. 71 indicates a first solder row formed by the ball-shaped, barrel-shaped, or cylindrical solders 7 arranged in a row in parallel with shorter sides of the waveguide terminal 2, and 72 indicates a second solder row

formed by the ball-shaped, barrel-shaped, or cylindrical solders 7 arranged in a row in parallel with longer sides of the waveguide terminal 2.

Please replace the paragraph beginning at page 15, line 12, with the following:

In Fig. 8A, the dielectric substrate 1 includes the waveguide terminal 2 formed therein, and the GND surface 8 disposed on the surface of the substrate for conducting electricity to the grounded conductor of the waveguide terminal 2. The multiple ball-shaped, barrel-shaped, or cylindrical solders 7 are arranged in a row around the waveguide terminal 2 on the GND surface 8 of the dielectric substrate 1. Herein, a gap between adjacent ball-shaped, barrel-shaped, or cylindrical solders 7 is set to be equal to, or less than  $\frac{1}{4}$  of the wavelength of a high frequency signal passing through the waveguide terminal 2. Assuming that L1 is a distance between the two first solder rows 71 arranged opposite to each other across the waveguide terminal 2, and L2 is a distance from an edge of the waveguide terminal 2 to either one of the two second solder rows 72 arranged opposite to each other across the waveguide terminal 2, L1 and L2 are set to have a relationship  $\lambda \times (0.7 \text{ to } 1.3) = 2 / (1/L1^2 + 1/L2^2)^{1/2}$  with respect to the wavelength  $\lambda$  of a high frequency signal passing through the waveguide terminal 2[[,]].

Please replace the paragraph bridging pages 18 and 19, with the following:

Fig. 10A is a top view showing a dielectric substrate of the waveguide coupler according to a fourth embodiment of the present invention. Figs. 10B and 10C are vertical sections of the dielectric substrate. In [[the]] these figures, components 1 to 9 are similar

to those of Embodiment 3, 10 indicates a solder resist serving as a resist film for joint members, 11 indicates a pad which forms part of the GND surface 8 for disposing the ball-shaped, barrel-shaped, or cylindrical solders 7 thereon, and 12 indicates a GND pattern formed in an internal layer of a multi-layered substrate.

Please replace the paragraph beginning on page 22, line 6, with the following:

Fig. 11A is a top view showing a dielectric substrate of the waveguide coupler according to a fifth embodiment of the present invention. Fig. 11B is a vertical section of the dielectric substrate. In ~~[[the]]~~ these figures, components 11 and 12 are similar to those of Embodiment 4.

Please replace the paragraph beginning at page 22, line 11, with the following:

The dielectric substrate 1 includes the waveguide terminal 2 formed therein, and the GND surface 8 disposed on the substrate for conducting electricity to the grounded conductor of the waveguide terminal 2. The GND pattern 12 (see Fig. 11B) connected to the grounded conductor of the waveguide terminal 2 is formed in the internal layer of the dielectric substrate 1 and connected to the pads 11 for the ball-shaped, barrel-shaped, or cylindrical solders 7 via the through holes 9.

Please replace the paragraph beginning on page 22, line 19, with the following:

By providing the pads 11 connected to the grounded conductor of the waveguide terminal 2 through the internal layer of the multi-layered substrate, it is possible to set the

positions of the ball-shaped, barrel-shaped, or cylindrical solders 7 accurately, while simplifying and reducing the cost of the connecting process of the waveguide terminal, as in Embodiment 2. It is also possible, as in Embodiment 3, to minimize the loss in the waveguide coupler by deriving and setting the parameters L1 and L2 (not shown herein) concerning the positions of the ball-shaped, barrel-shaped, or cylindrical solders 7.

Please replace the paragraph bridging pages 23 and 24 with the following:

Fig. 12A is a top view showing a dielectric substrate of the waveguide terminal according to a sixth embodiment of the present invention. Figs. 12B and 12C are vertical sections of the dielectric substrate. In ~~[[the]]~~ these figures, components 1 to 12 are similar to those of Embodiment 5, and 13 indicates a connecting wire for connecting the GND surface 8 to the pads 11.

Please replace the paragraph bridging pages 24 and 25, with the following:

By providing the pads 11 connected to the grounded conductor of the waveguide terminal 2 via the connecting wire 13, it is possible to set the positions of the ball-shaped, barrel-shaped, or cylindrical solders 7 accurately, while simplifying and reducing the cost of the connecting process of the waveguide terminal, as in Embodiment 2. It is also possible to minimize the loss in the waveguide coupler by deriving and setting the parameters L1 and L2 (not shown herein) concerning the positions of the ball-shaped, barrel-shaped, or cylindrical solders 7 as in Embodiment 3.

Please replace the paragraph beginning at page 26, line 4, with the following:

Fig. 13A is a top view showing a dielectric substrate of the waveguide coupler according to a seventh embodiment of the present invention. Figs. 13B and 13C are vertical sections of the dielectric substrate. In ~~[[the]]~~ these figures, components 1 to 12 are similar to those of Embodiment 4.

Please replace the paragraph bridging pages 27 and 28, with the following:

Fig. 14A is a top view showing a dielectric substrate of the waveguide coupler according to an eighth embodiment of the present invention. Fig. 14B is a vertical section of the dielectric substrate. In ~~[[the]]~~ these figures, 1 to 11 are similar to those of Embodiment 4.

Please replace the paragraph beginning on page 31, line 8, with the following:

By arranging the ball-shaped, barrel-shaped, or cylindrical solders 7 in several rows with a gap between the rows in the range of  $\pm 30\%$  of the  $\frac{1}{4}$  wavelength of the high frequency signal passing through the waveguide terminal 2, it is possible to suppress the coupling index between adjacent waveguide terminals, while, as in Embodiment 4, setting the positions of the ball-shaped, barrel-shaped, or cylindrical solders 7 accurately as well as simplifying and reducing the cost of the connecting process of the waveguide terminals. It is also possible to minimize the loss in the waveguide coupler by deriving and setting the parameters L1 and L2 (not shown herein) concerning the positions of the ball-shaped, barrel-shaped, or cylindrical solders 7.

Please replace the paragraph bridging pages 31 and 32, with the following:

Fig. 18A is a top view of a dielectric substrate of the waveguide coupler according to a tenth embodiment of the present invention. Fig. 18B is a vertical section of the dielectric substrate. In ~~[[the]]~~ these figures, components 1 to 11 are similar to those of Embodiment 4.

Please replace the paragraph beginning at page 32, line 15, with the following:

By arranging more than one waveguide terminals 2 adjacent to each other and disposing the ball-shaped, barrel-shaped, or cylindrical solders 7 around and between the waveguide terminals 2, it is possible to provide several waveguide terminals 2 in a small space, while setting the positions of the ball-shaped, barrel-shaped, or cylindrical solders 7 accurately as well as simplifying and reducing the cost of the connecting process of the waveguide terminals as in Embodiment 4. It is also possible, as in the Embodiment 3, to minimize the loss in the waveguide coupler by deriving and setting the parameters L1 and L2 (not shown herein) concerning the positions of the ball-shaped, barrel-shaped, or cylindrical solders 7.

Please replace the paragraph beginning on page 33, line 15, with the following:

Figs. 19A and 19C are top views of two types of dielectric substrates of the waveguide coupler according to an eleventh embodiment of the present invention. Fig. 19B is a vertical section of the waveguide coupler where the two types of dielectric

substrates are joined. In ~~[[the]]~~ these figures, components 1 to 13 are similar to those of Embodiments 4 and 6.

Please replace the paragraph bridging pages 33 and 34, with the following:

The dielectric substrate 1a of Fig. 19A is an upper substrate of the section shown in Fig. 19B, which includes the waveguide terminal 2a formed therein and the GND surface 8a disposed on the surface of the substrate for [conduct] conducting electricity to the grounded conductor of the waveguide terminal 2a. The GND surface 8a of Fig. 19A is connected via the connecting wire 13 to the pads 11a for the ball-shaped, barrel-shaped, or cylindrical solders 7 disposed on the surface of the dielectric substrate 1a. The connecting wire 13 also connects between the multiple pads 11. The GND surface 8a is connected to the grounded conductor of the waveguide terminal 2a via the GND pattern 12 (see in Fig. 19B) formed in the internal layer of the dielectric substrate 1a and the through holes 9.

Please replace the paragraph beginning on page 34, line 5, with the following:

The dielectric substrate 1b of Fig. 19C is a lower substrate of the section shown in Fig. 19B, which includes the waveguide terminal 2b formed therein and the GND surface 8b disposed on the substrate for conducting electricity to the grounded conductor of the waveguide terminal 2b. The solder resist 10 of Fig. 19C is applied on a region of the GND surface 8b other than the regions where the pads 11b for disposing the ball-shaped, barrel-shaped, or cylindrical solders 7 are to be formed. Thus, the pads 11b to which the ball-



shaped, barrel-shaped, or cylindrical solders 7 (see Fig. 19B) can be attached are formed on this region of the GND surface 8b.

Please replace the paragraph beginning on page 35, line 3, with the following:

Fig. 20A is an exploded perspective view of a waveguide coupler according to a twelfth embodiment of the present invention. Fig. 20B is a vertical section of the waveguide coupler. In [[the]] these figures, 1a, 1b, 2a, 2b, 8a, and 8c are similar to those of Embodiment 1, and 14 indicates an electrically conductive adhesive.

Please replace the paragraph beginning on page 35, line 8, with the following:

The waveguide coupler will be described. In [[the]] these figures, each dielectric substrate 1a, 1b includes the waveguide terminal 2a, 2b formed therein, and the GND surface 8a, 8b disposed on the surface of the substrate for conducting electricity to the grounded conductor of the waveguide terminal 2a, 2b. The two dielectric substrates 1a and 1b are disposed in a manner that the GND surfaces 8a and 8b oppose each other. The two dielectric substrates 1a and 1b are bonded together by the conductive adhesive 14 sandwiched between the GND surfaces 8a and 8b, whereby the waveguide terminals are connected. The conductive adhesive 14 is disposed to surround the circumference of both waveguide terminals 2a, 2b.

Please replace the paragraph beginning on page 36, line 2, with the following:

Fig. 21A is an exploded perspective view of a waveguide coupler according to a thirteenth embodiment of the present invention. Fig. 21B is a vertical section of the waveguide coupler. In ~~[[the]]~~ these figures, 1a, 1b, 2a, 2b, 8a, and 8c are similar to those of Embodiment 1, and 15 indicates ball-shaped, barrel-shaped, or cylindrical pieces of metal.

Please replace the paragraph beginning on page 36, line 8, with the following:

The waveguide coupler will be described. In ~~[[the]]~~ these figures, the dielectric substrates 1a and 1b, the waveguide terminals 2a and 2b, and the GND surfaces 8a and 8b are arranged similarly to those of Embodiment 1 and have similar functions. A plurality of ball-shaped, barrel-shaped, or cylindrical pieces of metal 15, such as gold, are arranged between the GND surfaces 8a and 8b so as to surround the circumference of the waveguide terminals 2a and 2b. The ball-shaped, barrel-shaped, or cylindrical pieces of metal 15 are arranged in a row in a manner that a gap between adjacent metal pieces 15 is equal to, or less than 1/4 of the wavelength of a high frequency signal passing through the waveguide terminals 2a and 2b. When the two dielectric substrates 1a and 1b are connected by thermocompression bonding, the waveguide terminals 2a and 2b formed in the dielectric substrates 1a and 1b are joined via the metals pieces 15.

Please replace the paragraph beginning on page 37, line 11, with the following:

Fig. 22 is a vertical section of a modified example of this embodiment in which 2a, 2b are waveguide terminals, 8a is the GND surface and 15 indicates ball-shaped barrel-

shaped or cylindrical pieces of metal, wherein the waveguide coupler uses the dielectric substrates 1a, 1b having the pads 11 formed by the solder resist 10 as shown in Fig. 10A. Herein, the [solders 7] metal pieces 15 are fused to the pads 11 on which no solder resist is applied.